

### **Rejections Under 35 U.S.C. § 112**

#### **A. Rejection of claims 40-43, 46-53, 55-62, 66, and 69-124**

The examiner rejected claims 40-43, 46-53, 55-62, 66, and 69-124 under 35 U.S.C. § 112, first paragraph, on several grounds. The foregoing amendments are believed to overcome the rejections. Some of the claims have been amended to recite “at least” in place of “or less” in order to correct an error in the manner in which the value was stated. Applicant submits that the previous language was inaccurate, and that persons of ordinary skill would have understood that “at least” was what was intended by the original claims, particularly in view of the specification, p. 20, lines 11-16. The amendment of “or less” to “at least” therefore does not narrow the claims.

#### **B. Rejection of claims 63-68 and 101-124**

The examiner also rejected claims 63-68 and 101-124 under 35 U.S.C. § 112, first and second paragraph, on the grounds that there is no basis or description in the specification as filed for “an organic diluent having a density sufficiently less than a second density of said phenol bottoms stream to attract phenol from the mixture into an organic phase. The examiner also objects that the term “second density” does not make sense because there is no indication of a “first density.”

Claim 63 has been cancelled and new claim 155 added. In new claim 155 and the remaining relevant claims, the term “diluent density” has been amended to “first density.” This change is a terminology change only and does not affect the scope of the claim. With respect to the examiner’s contention that there is no basis or description for “an organic diluent having a first density sufficiently less than a second density of said phenol

bottoms stream to attract phenol from the mixture into an organic phase,” Applicant respectfully refers the examiner to the following excerpts from the specification:

Accordingly, **a hydrocarbon diluent having a lower density than the density of the crude phenol bottoms stream** is added to enhance phase separation between the hydrocarbon and aqueous phase. This method of enhancing phase separation is more effective at removing salts than a method of increasing the salt concentration because by increasing the salt concentration, the amount of salt distributed into the hydrocarbon phase is increased and the effectiveness of the unit operation is reduced.

Diluents which are phase compatible and readily miscible with phenol, have a lower density than phenol, and which are phase incompatible with water under the operating conditions of the phase separator are preferred. **Such diluents will attract solubilized phenol from the aqueous phase into the hydrocarbon phase.**

Specification, p. 18, ll. 5-20 (emphasis added).

C. Rejection of Claims 73,78, 83, 88, 93, 99 and 103

The examiner rejected claims 73,78, 83, 88, 93, 99 and 103 under 35 U.S.C. § 112, fourth paragraph, as failing to properly further limit the parent claims. Applicant submits that the claims, as amended, do limit the parent claims, and respectfully requests that the rejection be withdrawn.

D. Rejection of various claims for double patenting

The examiner contends that a number of claims in the application are duplicates, and has rejected the alleged “duplicate” claims for double patenting. The amended claims are believed to overcome the rejection.

Rejection under 35 U.S.C. § 102

The examiner rejected claims 27, 28, 39-53, 55-62, and 69-124 under 35 U.S.C. § 102(e) as anticipated by U.S. Patent No. 5,847,235 in view of U.S. Patent No. 5,510,543.

## Response

Claims 27-38 and 55 have been cancelled and new claims 138, 139, 147, and 155 have been added.

In order to establish a case of *prima facie* anticipation of the remaining claims, the examiner must establish that a single prior art reference discloses every limitation of the claimed invention either explicitly or inherently. *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1346, 51 USPQ2d 1943, 1945 (Fed. Cir. 1999). The examiner's own rejection demonstrates that he is relying on more than a single reference. Applicant respectfully requests that the rejection under 35 U.S.C. § 102(e) be withdrawn for this reason alone.

The examiner has not pointed to a teaching or suggestion of every limitation of claims 39-53, 55-62, and 69-124, or the new claims, in U.S. Patent No. 5,847,235.

With respect to claims 39-53, the examiner contends that "[m]ost of claims 39+ make no reference to salts at all." Claim 39 has been cancelled and new claim 138, which reads as follows, has been added:

138. (New) A process for manufacturing phenolic compounds comprising:

means for separating a neutralized aralkyl hydroperoxide cleavage mass stream comprising salts of neutralization to produce a crude phenolic stream comprising said salts of neutralization;

means for separating said crude phenolic stream to produce a concentrated phenolic-rich stream and a crude phenolic bottoms stream comprising said salts of neutralization and a remainder of said phenolic compounds;

means for separating at least a portion of said remainder of said phenolic compounds from said crude phenolic bottoms stream into an organic phase.

The examiner has not pointed to a teaching of the foregoing elements of claim 138 in the Dyckman '235 patent, alone, or in combination with the '543 patent. Applicant urges the examiner to read the foregoing "means-plus-function" portions of claim 138 "to cover the corresponding structure, material, or acts described in the specification and equivalents thereof," as required under 35 U.S.C. § 112(6). "The 'broadest reasonable interpretation' that an examiner may give means-plus-function language is that statutorily mandated in paragraph six. Accordingly, the PTO may not disregard the structure disclosed in the specification corresponding to such language when rendering a patentability determination." *In re Donaldson Co.*, 16 F.3d 1189, 29 USPQ2d 1845 (Fed. Cir. 1994); MPEP 2181.

Claim 138 literally specifies "means for separating at least a portion of said remainder of said phenolic compounds from said crude phenolic bottoms stream into an organic phase." The examiner has not pointed to a teaching in U.S. Patent No. 5,847,235 of this limitation. The dependent claims no longer read on zero organic diluent, as the examiner previously contended.

Applicant respectfully requests that claim 138 be allowed along with dependent claims 40-53.

Claim 55 has been cancelled and new claim 147 has been added. The examiner has not established a *prima facie* case of anticipation of claim 147 over the Dyckman '235 patent. Claim 139 corresponds roughly to claim 54 and is slightly broader than claim 147. Claims 139 reads as follows:

139. (New) A process for manufacturing phenolic compounds comprising:

separating acetone and phenol from a wholly or partially neutralized aralkyl hydroperoxide cleavage mass comprising salts of neutralization to produce a crude phenolic stream comprising said salts of neutralization;

separating said crude phenolic stream to produce a concentrated phenolic-rich stream and a crude phenol bottoms stream, said crude phenol bottoms stream comprising said salts of neutralization and a remainder of said phenolic compounds;

treating said crude phenol bottoms stream with a quantity of an organic diluent effective to solubilize said remainder of said phenolic compounds;

allowing said mixture to phase separate, recovering said phenolic compounds in an organic phase.

The examiner has not pointed to the every limitation of claim 139 in the Dyckman '235 patent.

In fact, the Dyckman '235 patent teaches a method in which:

No extra solvents are employed to dilute the phenol tar to make it less viscous in order to facilitate intimate admixture and then efficient phase separation.

Surprisingly the direct contact of undiluted phenol tar with water alone in the present process gives superior extraction performance. Admixture of the phenol tar alone with water alone is usually sufficient as a result of the turbulence from the countercurrent flows in the extractor.

Dyckman '235 patent, col. 3, ll. 4-11. The examiner clearly has not pointed to a teaching or suggestion in the Dyckman '235 patent of "treating said crude phenol bottoms stream with a quantity of an organic diluent effective to solubilize said remainder of said phenolic compounds."

The examiner has not pointed to a teaching or suggestion of every limitation of claims 139-155 in the Dyckman '235 patent, and has not established a case of *prima facie* anticipation of any of claims 139-155 over the Dyckman '235 patent.

The examiner did not issue an alternate obviousness rejection. Nevertheless, the following discussion demonstrates that the examiner also has not established a case of

*prima facie* obviousness of claims 139-155 over the Dyckman '235 patent in view of U.S. Patent No. 5,510,543. The examiner has the burden to establish a *prima facie* case of unpatentability of the pending claims on any grounds, including obviousness. *In re Oetiker*, 24 U.S.P.Q.2d at 1443. In order to establish that the claims are *prima facie* obvious over the prior art, the examiner must point to two things in the prior art, and not in the applicant's disclosure--(1) the suggestion of the invention, and (2) the expectation of its success. *In re Vaeck*, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). See also MPEP 2143.

As previously pointed out, the examiner has not pointed to a teaching or suggestion of every limitation of claims 139-155 in the Dyckman '235 patent. The examiner also has not pointed to any expectation of success of the claimed limitations in the Dyckman '235 patent or elsewhere.

The examiner previously argued that U.S. Patent No. 5,510,543 was "not relied upon as prior art but as evidence that phenol tar is prepared by the cleavage mass treatment steps recited in the claims. As such, inherent in one obtaining the phenol tar treated in USP 5,283,376 are the recited steps of splitting the cleavage mass into acetone and phenol as required by the instant claims." First office action, p. 3-4. The foregoing is not a teaching or suggestion of the claimed limitation of "treating said crude phenol bottoms stream with a quantity of an organic diluent effective to solubilize said remainder of said phenolic compounds," or of similar limitations in the claims.

The examiner cannot establish *prima facie* obviousness merely by arguing that the subject matter of the claims could be derived by modifying the Dyckman '235 patent to treat the crude phenol bottoms stream with a quantity of an organic diluent effective to

solubilize the “remainder of said phenolic compounds.” In order to establish *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the **references themselves** that it would be desirable to make such a modification. MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995). The examiner has not pointed to a teaching or suggestion to modify the method described in the Dyckman ‘235 patent in the manner required to result in the claimed method, and has not established *prima facie* obviousness of claims 139-155, or any claims dependent therefrom.

**Rejection of claims 39-124 as anticipated under 35 U.S.C. § 102(b) over U.S. Patent No. 4,434,305**

The examiner rejected claims 39-124 as anticipated by U.S. Patent No. 4,434,305. The examiner admits that the ‘305 patent “may have additional or different processing steps than disclosed in the specification,” but contends that “this is of no moment. The manner in which applicants have chosen to write these claims does not exclude the procedure used in the reference and does not require the procedure as set forth in the specification.”

**Response**

Claims 39, 54, 55, and 63 have been cancelled and new claim 138-155 have been added. New claim 138 makes clear what was inherently present in claim 39, if that claim was construed “to cover the corresponding structure, material, or acts described in the specification and equivalents thereof,” as required under 35 U.S.C. § 112(6).

Namely, new claim 138 spells out that: the neutralized aralkyl hydroperoxide cleavage mass stream is separated to produce a crude phenolic stream; the crude phenolic stream is separated to produce the crude phenolic bottoms stream; and, that it is **the**

**crude phenolic bottoms stream** that is treated “with an organic diluent effective to separate at least a portion of said **remainder of said phenolic compounds** from said crude phenolic bottoms stream into an organic phase.”

Claims 139, 147, and 155 include similar limitations. The examiner has not pointed to a teaching or suggestion of the foregoing limitations in the ‘305 patent. The examiner contends that the “column bottom liquid” at col. 7, ll. 5-7 of the ‘305 patent corresponds to a crude phenol bottoms stream, and contends that “means for recovery of phenolic compounds in an organic phase” is found in “the methyl isobutyl ketone extraction of lines 17 and 18 of column 7.” However, the examiner has not pointed to a teaching or suggestion in the ‘305 patent to treat the recited “column bottom liquid” with methyl isobutyl ketone. Rather, the recited portions of the ‘305 patent read: “The percent hydroquinone recovered was 100% **through the dewatering column and the methyl isobutyl ketone stripping column**. The hydroquinone **contained in the water layer thus obtained** was extracted with methyl isobutyl ketone, crystallized, and recrystallized.” ‘305 patent, col. 7, ll. 13-19 (emphasis added).

The examiner also has not pointed to a teaching or suggestion to add cumene to the “column bottom liquid” described at col. 7, ll. 5-7 of the ‘305 patent. Rather, the cited portions of the ‘305 patent specify that: “**To the resultant acid decomposition reaction mixture**, sufficient cumene was added to achieve a 10% concentration.” ‘305 patent, col. 6, line 41-42 (emphasis added).

The examiner has not established a *prima facie* case of anticipation of claims 144-148, or their dependent claims, over the ‘305 patent.



### Rejections Under 35 U.S.C. § 103

The examiner rejected claims 23-124 under 35 U.S.C. § 103(a) as unpatentable over USP 5,847,235 and USP 5,283,376 optionally in view of USP 2,951,870 and USP 5,510,543 further optionally in view of USP 5,962,751 “for reasons of record.”

### Response

Claims 23-39, 54, 55, and 63 have been cancelled and new claims 138-155 have been added.

The examiner states that “[t]he feature that distinguishes the instant claims from what is taught in the prior art is the addition of an organic diluent.” According to the examiner, “applicants have chosen not to limit the claims to this feature.” Paper 13, pp. 5-6.

Original claims 54 and 55 contained the following limitation: “feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream **together with an organic diluent, allowing said mixture to phase separate, recovering said phenolic compounds in an organic phase.**” (Emphasis added).

Original claim 63 included the following limitation:

feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream together with an **organic diluent** having a first density sufficiently less than a second density of said phenol bottoms stream to attract phenol from said mixture into an organic phase comprising said diluent, allowing said mixture to phase separate, and **recovering said phenolic compounds in said organic phase.**

Emphasis added. The foregoing limitations in the rejected claims clearly required the addition of an organic diluent. New claims 138-155 similarly require the addition of an organic diluent, and are not narrowing in this respect.

Applicants also contend that original claim 39 required the addition of an organic diluent to the crude phenol bottoms. The examiner has not pointed to an embodiment in the specification in which an organic diluent is **not** added to the crude phenol bottoms to extract the phenolic compounds therefrom. See specification, p. 16, l. 31- p. 20, l. 30. Construing original claim 39 in a manner that would not require the addition of an organic diluent to the crude phenol bottoms would not be a construction corresponding to the “structure, material, or acts described in the specification and equivalents thereof,” as mandated under 35 U.S.C. § 112(6).

The examiner has not pointed to a teaching or suggestion in USP 5,847,235 or USP 5,283,376 to add an organic diluent to a crude phenol bottoms stream, as required by claims 138-155. The examiner cannot establish *prima facie* obviousness merely by arguing that the claimed method could be derived by modifying USP 5,847,235 and/or USP 5,283,376 to add an organic diluent to the crude phenol bottoms. In order to establish *prima facie* obviousness, the examiner has the burden to point to a teaching or suggestion in the **references themselves** that it would be desirable to make such a modification. MPEP 2143.01; *In re Brouwer*, 37 U.S.P.Q.2d 1663, 1666 (Fed. Cir. 1995).

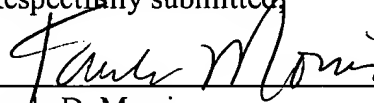
The examiner has not pointed to a teaching or suggestion to that would motivate a person of ordinary skill in the art to modify the method described in the Dyckman ‘235 patent and/or USP 5,283,376 in the manner required to result in the claimed method. The ‘305 patent does not provide the necessary motivation for all of the reasons discussed above. The examiner therefore has not established a case of *prima facie* obviousness of any of the claims.

Applicant respectfully requests that the obviousness rejection be withdrawn.

**Conclusion**

For all of the foregoing reasons, applicant respectfully requests withdrawal of the outstanding rejections and allowance of all of the pending claims. The Commissioner is hereby authorized to deposit any overpayment or to charge any underpayment of fees related to this matter to Deposit Account No. 50-0997, maintained by Paula D. Morris & Associates, P.C.

Respectfully submitted,

A handwritten signature in cursive script, appearing to read "Paula D. Morris", is written over a horizontal line.

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In re Application of:  
Taggart II, et al.

Serial No.: 09/304,298

Filed: May 3, 1999

For: Removal of Salts in the Manu-  
facture of Phenolic Compound

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Group Art Unit: 1621

Examiner: Michael L. Shippen

Atty. Docket: SHELL-TH1118

**MARKED UP COPY OF CLAIMS FILED WITH  
RESPONSE TO FINAL OFFICE ACTION**

BOX AF  
Assistant Commissioner for Patents  
Washington, D.C. 20231

40. (Amended) The method of claim [39] 138 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to said crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

41. (Amended) The method of claim [39] 138 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to said crude phenolic bottoms stream of at least 0.45:1 [or less].

42. (Amended) The method of claim [39] 138 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to said crude phenolic bottoms stream of at least 0.3:1 [or less].

43. (Amended) The method of claim [39] 138 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

44. (Amended) The method of claim [39] 138 wherein said means for producing a crude phenol bottoms stream comprises producing a partially or wholly neutralized aralkyl hydroperoxide cleavage mass, and at least 80 wt.% of the salts of neutralization present in said partially or wholly neutralized aralkyl hydroperoxide cleavage mass are removed through one or more aqueous streams.

45. (Amended) The method of claim [39] 138 wherein said means for producing a crude phenol bottoms stream comprises producing a partially or wholly neutralized aralkyl hydroperoxide cleavage mass, and at least 90 wt.% of the salts of neutralization present in said partially or wholly neutralized aralkyl hydroperoxide cleavage mass are removed through one or more aqueous streams.

56. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45:1 to 0.60:1 [or less].

57. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

58. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [0.15:1 or less].

59. (Amended) The method of claim [54] 139 wherein said means comprises producing a partially or wholly neutralized aralkyl hydroperoxide cleavage mass, and at least 90 wt.% of the salts of neutralization present in said partially or wholly neutralized aralkyl hydroperoxide cleavage mass are removed through one or more aqueous streams.

60. (Amended) The method of claim [55] 147 wherein said means comprises producing a partially or wholly neutralized aralkyl hydroperoxide cleavage mass, and at least 90 wt.% of the salts of neutralization present in said partially or wholly neutralized aralkyl hydroperoxide cleavage mass are removed through one or more aqueous streams.

64. (Amended) The method of claim [62] 155 wherein said [diluent] first density is at least about 1 pcf less than said second density.

65. (Amended) The method of claim [62] 155 wherein said [diluent] first density is at least about 2 pcf less than said second density.

66. (Amended) The method of claim [62] 155 wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams.

67. (Amended) The method of claim [63] 64 wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams.

68. (Amended) The method of claim [64] 65 wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams.

69. (Amended) The method of claim [54] 139 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from about 0.45:1 to about 0.6:1 [or less].

70. (Amended) The method of claim [54] 139 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

71. (Amended) The method of claim [54] 139 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

72. (Amended) The method of claim [54] 139 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

73. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from about 0.45:1 to about 0.6:1 [or less].

74. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

75. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

76. (Amended) The method of claim [55] 147 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

77. (Amended) The method of claim 56 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

78. (Amended) The method of claim 56 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

79. (Amended) The method of claim 56 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

80. (Amended) The method of claim 56 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

85. (Amended) The method of claim 58 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

86. (Amended) The method of claim 58 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

87. (Amended) The method of claim 58 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

88. (Amended) The method of claim 58 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

89. (Amended) The method of claim 59 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].



90. (Amended) The method of claim 59 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

91. (Amended) The method of claim 59 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

92. (Amended) The method of claim 59 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

93. (Amended) The method of claim 60 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

94. (Amended) The method of claim 60 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

95. (Amended) The method of claim 60 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

96. (Amended) The method of claim 60 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

97. (Amended) The method of claim 61 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

98. (Amended) The method of claim 61 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

99. (Amended) The method of claim 61 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

100. (Amended) The method of claim 61 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

101. (Amended) The method of claim 62 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

102. (Amended) The method of claim 62 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

103. (Amended) The method of claim 62 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

104. (Amended) The method of claim 62 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

109. (Amended) The method of claim 64 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

110. (Amended) The method of claim 64 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

111. (Amended) The method of claim 64 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

112. (Amended) The method of claim 64 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

113. (Amended) The method of claim 65 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45 to 0.6:1 [or less].

114. (Amended) The method of claim 65 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

115. (Amended) The method of claim 65 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

116. (Amended) The method of claim 65 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

117. (Amended) The method of claim 66 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45:1 to 0.6:1 [or less].

118. (Amended) The method of claim 66 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

119. (Amended) The method of claim 66 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

120. (Amended) The method of claim 66 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

121. (Amended) The method of claim 67 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45:1 to 0.6:1 [or less].

122. (Amended) The method of claim 67 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less].

123. (Amended) The method of claim 67 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less].

124. (Amended) The method of claim 67 wherein said organic phase comprises an organic diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less].

125. (Amended) [The method of claim 68 wherein said organic phase comprises an organic diluent] A process for manufacturing phenolic compounds comprising feeding a wholly or partially neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone and phenol from said cleavage mass in the splitter, leaving a crude phenol bottoms stream, feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream together with an organic diluent having a first density sufficiently less than a second density of said phenol bottoms stream to attract phenol from said mixture into an organic phase comprising said diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of from 0.45:1 to 0.6:1 [or less], allowing said mixture to phase separate, and recovering said phenolic compounds in said organic phase, wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams and wherein said first density is at least about 2 pcf less than said second density.

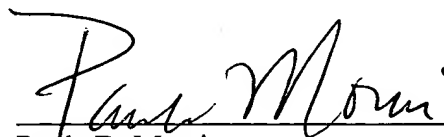
126. (Amended) [The method of claim 68 wherein said organic phase comprises an organic diluent] A process for manufacturing phenolic compounds comprising feeding a wholly or partially neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone and phenol from said cleavage mass in the splitter, leaving a crude phenol bottoms stream, feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream together with an organic diluent having a first density sufficiently less than a second density of said phenol bottoms stream to attract phenol from said mixture into an organic phase comprising said diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.45:1 [or less], allowing said mixture to phase separate, and recovering said phenolic compounds in said organic phase, wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams and wherein said first density is at least about 2 pcf less than said second density.

127. (Amended) [The method of claim 68 wherein said organic phase comprises an organic diluent] A process for manufacturing phenolic compounds comprising feeding a wholly or partially neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone and phenol from said cleavage mass in the splitter, leaving a crude phenol bottoms stream, feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream together with an organic diluent having a first density sufficiently less than a second density of said phenol bottoms stream to attract phenol from said mixture into an organic phase comprising said diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.3:1 [or less], allowing said mixture to phase

separate, and recovering said phenolic compounds in said organic phase, wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams and wherein said first density is at least about 2 pcf less than said second density.

128. (Amended) [The method of claim 68 wherein said organic phase comprises an organic diluent] A process for manufacturing phenolic compounds comprising feeding a wholly or partially neutralized aralkyl hydroperoxide cleavage mass containing salts of neutralization to a splitter, separating acetone and phenol from said cleavage mass in the splitter, leaving a crude phenol bottoms stream, feeding to a phase separation vessel a mixture comprising all or a portion of said crude phenol bottoms stream together with an organic diluent having a first density sufficiently less than a second density of said phenol bottoms stream to attract phenol from said mixture into an organic phase comprising said diluent at a weight ratio of organic diluent to crude phenolic bottoms stream of at least 0.15:1 [or less], allowing said mixture to phase separate, and recovering said phenolic compounds in said organic phase, wherein at least 80 wt.% of said salts of neutralization are removed in one or more aqueous streams and wherein said first density is at least about 2 pcf less than said second density.

Respectfully submitted,



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